STIC Search Report

EIC 1700

Scientific & Technical Information Center
USPTO

STIC Database Tracking Number: 132439

TO: Melvyn Andrews
Location: REM 6A01
Art Unit : 1742
September 20, 2004

Case Serial Number: 10/031813

From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes

sira
Search and Information Resources Administration

```
=> FILE WPIX
FILE 'WPIX' ENTERED AT 11:55:43 ON 20 SEP 2004
COPYRIGHT (C) 2004 THOMSON DERWENT

FILE LAST UPDATED:            15 SEP 2004      <20040915/UP>
MOST RECENT DERWENT UPDATE:      200459         <200459/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
    PLEASE VISIT:
 http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
    http://thomsonderwent.com/coverage/latestupdates/           <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
    GUIDES, PLEASE VISIT:
    http://thomsonderwent.com/support/userguides/               <<<

>>> NEW! FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT
    DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
    FIRST VIEW - FILE WPIFV.
    FOR FURTHER DETAILS: http://www.thomsonderwent.com/dwpifv  <<<

>>> NEW DISPLAY FORMAT HITSTR ADDED ALLOWING DISPLAY OF
    HIT STRUCTURES WITHIN THE BIBLIOGRAPHIC DOCUMENT  <<<

=> D QUE L49
L22            1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25            1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34      1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39         6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42            3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                 HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                 ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                 TETRAFLUOROETHANE)
L43            0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                 ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L44            3 SEA FILE=WPIX ABB=ON  L42 OR L43
L46            1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L49            4 SEA FILE=WPIX ABB=ON  L44 OR L46

=> D L49 FULL 1-4

L49  ANSWER 1 OF 4  WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN   2004-227174 [21]   WPIX
DNN  N2004-179528        DNC C2004-089559
TI   Production of magnesium alloy strip comprises passing
     molten alloy to feeding device, feeding molten alloy to chamber,
     rotating rolls in which alloy is drawn from chamber, and flowing coolant
     fluid through each roll.
DC   M22 P53
IN   ALLEN, R V; BORBIDGE, W; EAST, D R; LIANG, D D
PA   (CSIR) COMMONWEALTH SCI & IND RES ORG
CYC  105
PI   WO 2004020126   A1 20040311 (200421)* EN   33    B22D011-06
        RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS
            LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
```

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH
PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC
VN YU ZA ZM ZW

ADT WO 2004020126 A1 WO 2003-AU1097 20030827
PRAI AU 2002-951075 20020829
IC ICM B22D011-06
AB WO2004020126 A UPAB: 20040326

NOVELTY - **Magnesium** alloy strip is produced by passing **molten** alloy from source of supply to feeding device, feeding molten alloy from feeding device through a nozzle (30) to a chamber (44), rotating rolls (32ab) in opposite direction in which alloy is drawn from the chamber, and flowing coolant fluid through each roll to provide internal cooling of the rolls.

DETAILED DESCRIPTION - Production of **magnesium** alloy strip involves passing **molten** alloy from source of supply to feeding device; feeding the molten alloy from the feeding device through the nozzle to the chamber formed between an elongate outlet of the nozzle and a pair of parallel rolls that are spaced one above the other to define a bite; rotating the rolls in opposite direction in which alloy is drawn from the chamber through the bite; and flowing coolant fluid through each roll to provide internal cooling of the rolls to cool the alloy received in the chamber by heat energy extraction by the cooled rolls to complete solidification of the alloy. The production method further includes maintaining the alloy held at the source at a temperature to maintain the alloy in the feed device at superheated temperature above its liquidus temperature, maintaining a depth of molten alloy in the feed device at a controlled constant height of 5-22 mm above a centerline of the bite in a plane containing the axes of the rolls, and maintaining heat energy extraction by the cooled rolls at a level to maintain alloy strip issuing from the bite at a surface temperature below 400 deg. C.

USE - Used in the production of magnesium alloy strip.

ADVANTAGE - Provides magnesium alloy strip of a required thickness and width.

DESCRIPTION OF DRAWING(S) - The figure shows an enlarged scale details relating to magnesium alloy solidification.

Nozzle 30
Rolls 32ab
Nip 34
Horizontal plates 36,37
Outlet 42
Chamber 44
Dwg.9/12

TECH WO 2004020126 A1UPTX: 20040326

TECHNOLOGY FOCUS - METALLURGY - Preferred Methods: The alloy at the source is held at 15-60 degrees C above its liquidus temperature. The level of heat extraction is able to maintain the surface temperature at 180-300 degrees C. The rolls apply a specific load of 2-500 kg/mm of roll length to the solidified alloy passing through the bite. A protective atmosphere is maintained over the molten alloy to safeguard against oxidation and risk of fire. The atmosphere includes a minor proportion of 1,1,1,2-**tetrafluoroethane**.

FS CPI GMPI
FA AB; GI
MC CPI: M22-G03A1A

L49 ANSWER 2 OF 4 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-055485 [07] WPIX

```
DNN  N2002-040877       DNC C2002-015901
TI   Treatment of molten magnesium to protect
     magnesium from reacting with air involves exposing molten
     magnesium to gaseous mixture comprising fluorocarbon that includes
     limited amounts of hydrogen.
DC   E16 M25 P53
IN   MILBRATH, D S; OWENS, J G
PA   (MINN) 3M INNOVATIVE PROPERTIES CO
CYC  96
PI   WO 2001083836   A2 20011108 (200207)* EN   26    C22B026-22
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
            NL OA PT SD SE SL SZ TR TZ UG ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
            DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ
            LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD
            SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
     AU 2001052990   A  20011112 (200222)
     NO 2002000027   A  20020207 (200227)             C22B000-00
     KR 2002065466   A  20020813 (200309)             C22B026-22
     EP 1278897      A2 20030129 (200310)  EN         C22B026-22
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI TR
     US 2003034094   A1 20030220 (200316)             C23C014-12
     US 6537346      B2 20030325 (200325)             C22B009-05
     US 2003164068   A1 20030904 (200359)             A62D001-02
     US 2003164069   A1 20030904 (200359)             C22B009-00
     MX 2001013455   A1 20020801 (200367)             C22B026-22
     JP 2003531965   W  20031028 (200373)       37    C22B026-22
     US 6685764      B2 20040203 (200413)             C22B009-05
     US 6780220      B2 20040824 (200457)             C22B026-22
ADT  WO 2001083836 A2 WO 2001-US9899 20010328; AU 2001052990 A AU 2001-52990
     20010328; NO 2002000027 A WO 2001-US9899 20010328, NO 2002-27 20020103; KR
     2002065466 A KR 2002-700054 20020103; EP 1278897 A2 EP 2001-926456
     20010328, WO 2001-US9899 20010328; US 2003034094 A1 Provisional US
     2000-202169P 20000504, US 2001-780256 20010209; US 6537346 B2 Provisional
     US 2000-202169P 20000504, US 2001-780256 20010209; US 2003164068 A1
     Provisional US 2000-202169P 20000504, CIP of US 2001-780256 20010209, US
     2003-394852 20030322; US 2003164069 A1 Provisional US 2000-202169P
     20000504, CIP of US 2001-780256 20010209, US 2003-394853 20030322; MX
     2001013455 A1 WO 2001-US9899 20010328, MX 2001-13455 20011219; JP
     2003531965 W JP 2001-580443 20010328, WO 2001-US9899 20010328; US 6685764
     B2 Provisional US 2000-202169P 20000504, CIP of US 2001-780256 20010209,
     US 2003-394852 20030322; US 6780220 B2 Provisional US 2000-202169P
     20000504, CIP of US 2001-780256 20010209, US 2003-394853 20030322
FDT  AU 2001052990 A Based on WO 2001083836; EP 1278897 A2 Based on WO
     2001083836; US 2003164068 A1 CIP of US 6537346; US 2003164069 A1 CIP of US
     6537346; MX 2001013455 A1 Based on WO 2001083836; JP 2003531965 W Based on
     WO 2001083836; US 6685764 B2 CIP of US 6537346; US 6780220 B2 CIP of US
     6537346
PRAI US 2001-780256        20010209; US 2000-202169P      20000504;
     US 2003-394852        20030322; US 2003-394853       20030322
IC   ICM  A62D001-02; C22B000-00; C22B009-00; C22B009-05; C22B026-22;
          C23C014-12
     ICS  B22D001-00; B22D021-02; B22D021-04; C07C049-16; C22B009-02;
          C23C008-06; C23C026-00; G06F017-60
AB   WO 200183836 A UPAB: 20020130
     NOVELTY - Molten magnesium is treated by providing
     molten magnesium and exposing the magnesium to
     a gaseous mixture comprising fluorocarbon such as perfluoroketone, and/or
```

hydrofluoroketone.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) solid magnesium including a film formed on the surface of the **magnesium** including a reaction product of **molten magnesium** and a fluorocarbon; and

(B) a method of extinguishing fire on the surface of magnesium.

USE - For protecting magnesium used in automotive and aerospace industries, from reacting with oxygen in air.

ADVANTAGE - The global warming potentials of PFKs and HFKs are quite low (less than 22200). Thus, the process is more environmentally friendly. PFKs and HFKs also react more fully with **molten magnesium** than does sulfur hexafluoride. AS a result less unreacted cover gas can be emitted to the atmosphere and/or less cover gas can be required to produce a comparably performing protective film. As a result, useful concentrations of the cover gas can be lowered, reducing the global warming impact. The full substitution of the invention for SF6 can be accomplished without increasing the risk of worker safety since PFKs and HFs are of low toxicity, are non-flammable and are very innocuous materials. Surface films produced with the PFKs and HFKs are more stable to higher temperatures than those formed with sulfur dioxide, enabling work with higher melt temperatures (for additional alloys and more complex casting parts).

Dwg.0/0

TECH WO 200183836 A2UPTX: 20020130

TECHNOLOGY FOCUS - METALLURGY - Preferred Component: The gaseous mixture contains a carrier gas such as air, carbon dioxide, argon, and/or nitrogen.

Preferred Material: The magnesium is in the form of ingots or castings.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Compounds: The perfluoroketone (PFK) is 1,1,1,2,4,4,5,5,5-nonafluoro-2-trifluoromethyl-pentan-3-one, 1,1,1,2,4,5,5,5-octafluoro-2,4 di(trifluoromethyl)-pentan-3-one, 1,1,1,2,4,4,5,5,6,6,6-undecafluoro-2- trifluoromethyl-hexan-3-one, 1,1,1,2,4,4,5,5,6,6,7,7,7-tridecafluoro-2-trifluoromethyl-heptan-3-one 1,1,1,3,3,4,4,5,5,6,6,7,7,8,8,8-octafluoro-octan-2-one, 1,1,1,2,2,4,4,5,5,6,6,6-dodecafluoro-hexan-3-one, 1,1,1,3,4,4,4-heptafluoro-3-trifluoromethyl-butan-2-one, perfluorocyclohexanone and their mixtures.

The **hydrofluoroketone** (HFK) is HCF2CF2C(O)CF(CF3)2, CF3C(O)CH2C(O)CF3, C2H5C(O)CF(CF3)2, CF2CF2C(O)CH3, (CF3)2CFC(O)CH3, CF3CF2C(O)CHF2, CF3CF2C(O)CH2F, CF3CF2C(O)CH2CF3, CF3CF2C(O)CH2CH3, CF3CF2C(O)CH2CHF2, CF3CF2C(O)CH2CHF2, CF3CF2C(O)CH2CH2F, CF3CF2C(O)CHFCH3, CF3CF2C(O)CHFCHF2, CF3CF2C(O)CF2CH2F, (CF3)2CFC(O)CHF2, (CF3)2CFC(O)CH2F, CF3CF(CH2F)C(O)CHF2, CH3CF(CH2F)C(O)CH2F, and/or CF3CF(CH2F)C(O)CF3, and their mixtures..

ABEX WO 200183836 A2UPTX: 20020130

EXAMPLE - Pure magnesium (3 kg) was heated to 680 degreesC and two cover gases were continuously applied separately to the surface of the molten magnesium. The invented method used 1,1,1,2,4,4,5,5,5-nonafluoro-2-trifluoromethyl-pentan-3-one (perfluorinated ketone) as cover gas, while the comparative process used methoxy nonafluorobutane. The cover gases were evaluated at 1% and at decreasing volumetric concentrations in air. At all concentrations, the perfluorinated ketone produced a film visually thinner and more elastic than that produced by the comparative process. The film produced was stable and did not change appearance over at least 30 minutes. This was in contrast to the test using methoxy nonafluorobutane, where metal burning was noted when the cover gas concentration was reduced to 625 ppm.

FS CPI GMPI

```
FA   AB; DCN
MC   CPI: E10-F02A3; E10-F02C; M25-G16

L49  ANSWER 3 OF 4  WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN   2001-070604 [08]   WPIX
DNN  N2001-053480         DNC C2001-019551
TI   Cover gas composition for protecting molten magnesium
     (alloy) comprises fluorine containing inhibiting agent and carrier gas.
DC   E16 M22 P35 P53
IN   BAKER, P W; CASHION, S P; FROST, M T; KORN, C J; RICKETTS, N J
PA   (CAST-N) CAST CENT PTY LTD
CYC  94
PI   WO 2000064614   A1 20001102 (200108)* EN   20    B22D021-04
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SL SZ TZ UG ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ
            EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK
            LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI
            SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
     AU 2000040930   A  20001110 (200109)
     BR 2000010137   A  20020122 (200216)             B22D021-04
     NO 2001005264   A  20011221 (200221)             B22D000-00
     EP 1204499      A1 20020515 (200239)  EN         B22D021-04
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI
     CZ 2001003817   A3 20020515 (200241)             B22D021-04
     KR 2002011397   A  20020208 (200255)             B22D021-04
     HU 2002000990   A2 20020729 (200258)             B22D021-04
     CN 1352583      A  20020605 (200261)             B22D021-04
     SK 2001001556   A3 20020806 (200261)             B22D021-04
     JP 2002541999   W  20021210 (200301)       18    A62C003-06
     ZA 2001008862   A  20021224 (200309)       24    B22D000-00
     TW 500805       A  20020901 (200334)             C22B026-22
     NZ 515084       A  20031031 (200380)             B22D021-04
     AU 766844       B  20031023 (200381)             B22D021-04
     MX 2001010941   A1 20030601 (200417)             A62D001-02
ADT  WO 2000064614 A1 WO 2000-AU393 20000428; AU 2000040930 A AU 2000-40930
     20000428; BR 2000010137 A BR 2000-10137 20000428, WO 2000-AU393 20000428;
     NO 2001005264 A WO 2000-AU393 20000428, NO 2001-5264 20011026; EP 1204499
     A1 EP 2000-920274 20000428, WO 2000-AU393 20000428; CZ 2001003817 A3 WO
     2000-AU393 20000428, CZ 2001-3817 20000428; KR 2002011397 A KR 2001-713855
     20011029; HU 2002000990 A2 WO 2000-AU393 20000428, HU 2002-990 20000428;
     CN 1352583 A CN 2000-808146 20000428; SK 2001001556 A3 WO 2000-AU393
     20000428, SK 2001-1556 20000428; JP 2002541999 W JP 2000-613596 20000428,
     WO 2000-AU393 20000428; ZA 2001008862 A ZA 2001-8862 20011026; TW 500805 A
     TW 2000-108130 20000504; NZ 515084 A NZ 2000-515084 20000428, WO
     2000-AU393 20000428; AU 766844 B AU 2000-40930 20000428; MX 2001010941 A1
     WO 2000-AU393 20000428, MX 2001-10941 20011026
FDT  AU 2000040930 A Based on WO 2000064614; BR 2000010137 A Based on WO
     2000064614; EP 1204499 A1 Based on WO 2000064614; CZ 2001003817 A3 Based
     on WO 2000064614; HU 2002000990 A2 Based on WO 2000064614; SK 2001001556
     A3 Based on WO 2000064614; JP 2002541999 W Based on WO 2000064614; NZ
     515084 A Based on WO 2000064614; AU 766844 B Previous Publ. AU 2000040930,
     Based on WO 2000064614; MX 2001010941 A1 Based on WO 2000064614
PRAI AU 1999-15             19990428
IC   ICM  A62C003-06; A62D001-02; B22D000-00
     ICS  B22D021-02; C22B004-02; C22C001-02; C22C023-00
ICA  B22D021-04; C22B026-22
AB   WO 200064614 A UPAB: 20010207
```

applicants

NOVELTY - Cover gas composition comprises a fluorine containing inhibiting agent and a carrier gas. Each component has a Global Warming Potential (GWP) of less than 5000.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) a method of protecting **molten magnesium** (alloy);

(b) use of the inhibiting agent for preventing or minimizing oxidation of **molten magnesium** (alloy);

(c) a method of extinguishing a magnesium (alloy) fire.

USE - For use as cover gases for protecting **molten magnesium** (alloys).

ADVANTAGE - The inventive cover gas composition provides good industrial scale protection of **molten magnesium** at a lower concentration.

Dwg.0/0

TECH WO 200064614 A1UPTX: 20010207

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Gas: The carrier gas is carbon dioxide, argon, nitrogen, and/or preferably dry air.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Materials: The inhibiting agent is **difluoromethane**, pentafluoromethane, **difluoroethane, heptafluoropropane, methoxy-nonafluorobutane, ethoxy-nonafluorobutane, dihydrodecafluoropentane**, and/or preferably 1,1,1,2-**tetrafluoroethane**.

Preferred Properties: The inhibiting agent has a boiling point of less than 100 degrees C and has no ozone depletion potential.

The composition has a GWP of less than 3000 (preferably less than 1500).

Preferred Composition: The composition contains inhibiting agent (less than 1, preferably less than 0.1 vol.%).

ABEX WO 200064614 A1UPTX: 20010207

EXAMPLE - A crucible furnace containing 100g of molten pure magnesium at 680 degrees C was blanketed with a gaseous composition consisting of 1,1,1,2-tetrafluoroethane (0.02 volume%) and dry air (balance). Good molten protection was observed, with the formation of a thin protective surface film.

FS CPI GMPI

FA AB; DCN

MC CPI: E10-H04A3; E31-H03; E31-J; E31-N05C; M22-G

L49 ANSWER 4 OF 4 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1996-171062 [17] WPIX

DNC C1996-053941

TI Catalyst preparation for production of 1,1,1,2-tetra fluoroethane - by producing admixture of compsn. comprising chromium hydroxide hydrate and e.g. magnesium chloride with aqueous metal salt, reacting in liquid phase, etc..

DC E16 J04

IN KIM, H; LEE, B; PARK, K; KIM, H S; LEE, B G; PARK, K Y

PA (KOAD) KOREA INST SCI & TECHNOLOGY; (KOAD) KOREA ADV INST SCI & TECHNOLOGY

CYC 2

PI	US 5500400	A	19960319 (199617)*		4	B01J023-26
	KR 9616683	B1	19961220 (199931)			B01J023-26

ADT US 5500400 A US 1994-302636 19940908; KR 9616683 B1 KR 1993-27091 19931209

PRAI KR 1993-27091 19931209

IC ICM B01J023-26

ICS B01J023-78; C07C019-08

AB US 5500400 A UPAB: 19960428

The catalyst for the production of 1,1,1,2-**tetrafluoroethane** (HFC-134a) is prepared by: (a) preparing an admixture of a compsn.

```
-    comprising Cr hydroxide hydrate and MgCl2 or CaCl2 in a weight ratio of Cr to
     Mg or Ca of 1:0.3-10 with an aqueous metal salt solution from Ce, Mg, Ni and Al
     chlorides, (b) reacting the mixture in the liquid phase with an aqueous HF
solution
     to give a paste; and (c) sintering the paste.
          Also claimed is a catalyst for the production of HFC-134a represented by
     formula CraLbMcOxFy (I), where: L = Mg or Ca; M = one of Ce, Ni, Zn, and
     Al; and a, b, c, x and y = 0-2.
          USE - Used in the production of HFC-134a for use in refrigerators, car
     cooling systems, etc., by reaction of HCFC-133a with HF.
          ADVANTAGE - The catalyst has improved selectivity and durability, and
     remains active over extended periods. Pre-treatment with HF solution is not
     required, and the supply of O2 to reduce catalyst deactivation is also not
     required, thus reducing by-prod. formation, HCl oxidation, and water
     formation, lowering corrosion in the appts..
     Dwg.0/0
FS   CPI
FA   AB; DCN
MC   CPI: E10-H03A3; E35-C; E35-P; E35-W; J04-E04; N01-B; N01-C; N03-A;
          N03-D01; N03-F; N06-E


=>  FILE HCAPLU
FILE 'HCAPLUS' ENTERED AT 11:56:28 ON 20 SEP 2004
```



```
FILE COVERS 1907 - 20 Sep 2004  VOL 141 ISS 13
FILE LAST UPDATED: 19 Sep 2004  (20040919/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


=> D QUE L37
L22          1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L23         13 SEA FILE=REGISTRY ABB=ON  (124-38-9/BI OR 12634-54-7/BI OR
               138495-42-8/BI OR 163702-05-4/BI OR 219484-64-7/BI OR 33660-75-
               2/BI OR 354-33-6/BI OR 7439-95-4/BI OR 7440-37-1/BI OR
               75-10-5/BI OR 75-37-6/BI OR 7727-37-9/BI OR 811-97-2/BI)
L24          8 SEA FILE=REGISTRY ABB=ON  L23 AND 1-20/F
L25          1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L28          1 SEA FILE=REGISTRY ABB=ON  "1,1,1,2-TETRAFLUOROETHANE"/CN
L32          1 SEA FILE=REGISTRY ABB=ON  163702-08-7
L34    1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L35      19560 SEA FILE=HCAPLUS ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L36       8793 SEA FILE=HCAPLUS ABB=ON  L24 OR L28 OR L32
```

```
L37            8 SEA FILE=HCAPLUS ABB=ON  L35 AND L36
```

```
=> FILE COMPENDEX
FILE 'COMPENDEX' ENTERED AT 11:56:41 ON 20 SEP 2004
```


```
FILE LAST UPDATED: 20 SEP 2004       <20040920/UP>
FILE COVERS 1970 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
    THE BASIC INDEX >>>

=> D QUE L47
L22            1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25            1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34      1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39         6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42            3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                 HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                 ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                 TETRAFLUOROETHANE)
L43            0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                 ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L45            1 SEA FILE=COMPENDEX ABB=ON  L42 OR L43
L46            1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L47            1 SEA FILE=COMPENDEX ABB=ON  L45 OR L46
```

```
=> FILE METADEX
FILE 'METADEX' ENTERED AT 11:57:02 ON 20 SEP 2004
```


```
FILE LAST UPDATED: 30 AUG 2004       <20040830/UP>
FILE COVERS 1966 TO DATE.

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN THE
    BASIC INDEX (/BI) <<<

=> D QUE L50
L22            1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25            1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34      1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39         6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42            3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                 HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                 ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                 TETRAFLUOROETHANE)
L43            0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                 ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L44            3 SEA FILE=WPIX ABB=ON  L42 OR L43
L46            1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L50            3 SEA FILE=METADEX ABB=ON  L44 OR L46
```

```
=> FILE NTIS
FILE 'NTIS' ENTERED AT 11:57:28 ON 20 SEP 2004
```

FILE LAST UPDATED: 18 SEP 2004 <20040918/UP>
FILE COVERS 1964 TO DATE.

<<<SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
THE BASIC INDEX (/BI) >>>

```
=> D QUE L51
L22           1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25           1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34     1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39        6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42           3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                TETRAFLUOROETHANE)
L43           0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L44           3 SEA FILE=WPIX ABB=ON  L42 OR L43
L46           1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L51           0 SEA FILE=NTIS ABB=ON  L44 OR L46
```

=> FILE JICST
FILE 'JICST-EPLUS' ENTERED AT 11:57:42 ON 20 SEP 2004

FILE COVERS 1985 TO 13 SEP 2004 (20040913/ED)

THE JICST-EPLUS FILE HAS BEEN RELOADED TO REFLECT THE 1999 CONTROLLED
TERM (/CT) THESAURUS RELOAD.

```
=> D QUE L52
L22           1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25           1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34     1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39        6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42           3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                TETRAFLUOROETHANE)
L43           0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L44           3 SEA FILE=WPIX ABB=ON  L42 OR L43
L46           1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L52           0 SEA FILE=JICST-EPLUS ABB=ON  L44 OR L46
```

=> FILE JAPIO
FILE 'JAPIO' ENTERED AT 11:57:55 ON 20 SEP 2004

FILE LAST UPDATED: 3 SEP 2004 <20040903/UP>
FILE COVERS APR 1973 TO APRIL 30, 2004

<<< GRAPHIC IMAGES AVAILABLE >>>

```
=> D QUE L53
L22             1 SEA FILE=REGISTRY ABB=ON  12634-54-7
L25             1 SEA FILE=REGISTRY ABB=ON  MAGNESIUM/CN
L34       1543680 SEA FILE=HCAPLUS ABB=ON  L22 OR L25 OR (MG OR MAGNESIUM)
L39          6125 SEA FILE=WPIX ABB=ON  L34(6A)(MELT? OR MOLTEN? OR LIQ?)
L42             3 SEA FILE=WPIX ABB=ON  L39 AND (DIFLUOROMETHANE OR PENTAFLUOROET
                  HANE OR DIFLUOROETHANE OR HEPTAFLUOROPROPANE OR (METHOXY OR
                  ETHOXY)(W)NONAFLUOROBUTANE OR DIHYDRODECAFLUOROPENTANE OR
                  TETRAFLUOROETHANE)
L43             0 SEA FILE=WPIX ABB=ON  L39 AND (HYDROFLUOROETHER# OR HYDRO(W)FLU
                  ORO(W)ETHER# OR HYDROFLUORO(W)ETHER#)
L44             3 SEA FILE=WPIX ABB=ON  L42 OR L43
L46             1 SEA FILE=COMPENDEX ABB=ON  L39 AND HYDROFLUORO?
L53             0 SEA FILE=JAPIO ABB=ON  L44 OR L46

=> DUP REM L37 L47 L50
FILE 'HCAPLUS' ENTERED AT 11:58:18 ON 20 SEP 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'COMPENDEX' ENTERED AT 11:58:18 ON 20 SEP 2004
Compendex Compilation and Indexing (C) 2004
Elsevier Engineering Information Inc (EEI). All rights reserved.
Compendex (R) is a registered Trademark of Elsevier Engineering Information Inc.

FILE 'METADEX' ENTERED AT 11:58:18 ON 20 SEP 2004
COPYRIGHT (c) 2004 Cambridge Scientific Abstracts (CSA)
PROCESSING COMPLETED FOR L37
PROCESSING COMPLETED FOR L47
PROCESSING COMPLETED FOR L50
L54             9 DUP REM L37 L47 L50 (3 DUPLICATES REMOVED)

=> D L54 ALL HITSTR 1-9
```

L54 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:409780 HCAPLUS
DN 139:10048
ED Entered STN: 29 May 2003
TI **Magnesium melt** protection at **Magnesium** Elektron using HFC-134a
AU Lyon, Paul; Rogers, Philip D.; King, John F.; Cashion, Simon P.; Ricketts, Nigel J.
CS Development Dept., Magnesium Elektron, Manchester, M27 8DD, UK
SO Magnesium Technology 2003, Proceedings of the Symposium held during the 2003 TMS Annual Meeting, San Diego, CA, United States, ar. 2-6, 2003 (2003), 11-14. Editor(s): Kaplan, Howard I. Publisher: Minerals, Metals & Materials Society, Warrendale, Pa.
CODEN: 69DYJV; ISBN: 0-87339-533-6
DT Conference
LA English
CC 56-2 (Nonferrous Metals and Alloys)
AB Several workers are actively seeking alternatives to SF6. CAST/AMC have patented the use of a HFC gas HFC-134a. This gas has a GWP 95% lower than SF6. Magnesium Elektron (MEL) and CAST have collaborated on the use of HFC-134a to achieve successful production plant trials for ingot manufacture
This

paper provides details and results of those plant trials at Magnesium Elektron. Magnesium Elektron ingot production is currently based on either SF6 or SO2 as the active gas. Comparative evaluation of HFC-134a included, development of gas mixing equipment, distribution optimization, optimization of concentration and flow rates and assessment of breakdown products and potential implications. The results, from over 150 production-scale **Mg**-Al-Zn **melts**, demonstrated that HFC-134a could offer equal protection to SF6 or SO2. Use of HFC-134a by Magnesium Elektron for com. production is proposed.

ST **magnesium** casting **melt** protection fluorinated hydrocarbon

IT **Melting**
(alloy; **magnesium melt** protection in casting with HFC-134a)

IT Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro; **magnesium melt** protection in casting with HFC-134a)

IT Casting of metals
Controlled atmospheres
(**magnesium melt** protection in casting with HFC-134a)

IT **811-97-2**, HFC-134a
RL: NUU (Other use, unclassified); USES (Uses)
(**magnesium melt** protection in casting with HFC-134a)

IT 135860-09-2, AZ91D
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(**magnesium melt** protection in casting with HFC-134a)

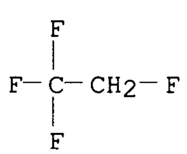
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Bartos, S; Magnesium Technology 2000 2000, P83
(2) Cashion, S; Paper presented at the 8th Annual IMA Magnesium in Automotive Seminar 2000
(3) Cashion, S; PhD Thesis, University of Queensland 1999
(4) Erickson, S; Foundry Management and Technology 1998, V126(6), P38
(5) Fruehling, J; PhD thesis, University of Michigan 1970
(6) Gjestland, H; The 3rd International Magnesium Conference 1996, P33
(7) Granier, C; Scientific Assessment of Ozone Depletion 1998
(8) Reimers, H; US 1972317 1934 HCAPLUS
(9) Ricketts, N; Magnesium Technology 2001 2001, P31 HCAPLUS

IT **811-97-2**, HFC-134a
RL: NUU (Other use, unclassified); USES (Uses)
(**magnesium melt** protection in casting with HFC-134a)

RN 811-97-2 HCAPLUS

CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L54 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:403070 HCAPLUS
DN 137:220130
ED Entered STN: 30 May 2002
TI Characterisation of the surface films formed on **molten magnesium** in different protective atmospheres
AU Pettersen, Gunnar; Ovrelid, E.; Tranell, G.; Fenstad, J.; Gjestland, H.
CS SINTEF Materials Technology, Trondheim, N-7465, Norway
SO Materials Science & Engineering, A: Structural Materials: Properties, Microstructure and Processing (2002), A332(1-2), 285-294
CODEN: MSAPE3; ISSN: 0921-5093
PB Elsevier Science B.V.
DT Journal
LA English
CC 56-2 (Nonferrous Metals and Alloys)
AB **Molten Mg** oxidizes rapidly during casting and handling unless it is protected by an atmospheric that stabilizes the surface. In this article, results from the anal. of **Mg melt** surfaces exposed to SO2 and different fluorine-containing atmospheres are reported. The microstructure of the surface films, formed during controlled exposure in laboratory scale expts., have been characterized using X-ray diffraction (XRD), electron probe microanal. (EPMA) and transmission electron microscopy (TEM). Both SO2 and the fluorine-containing gases were found to protect the melt from burning and vaporization in oxidizing atmospheres. The protected surfaces generally had a shiny metallic appearance, but turned dull gray after extended exposure to high concns. of fluorine containing gases. All the surface films initially consisted of small crystallites of MgO forming a thin continuous film. This film was found to contain some sulfur when the melt was protected by SO2, while fluorine was the only element detected in the oxide when SF6 or other fluorine-containing gases were used for protection. With increasing exposure time, the films gradually grew thicker and the fluorine/oxygen-ratio of the films formed in fluorine-containing atmospheres increased. Finally, after long term exposure to fluorine containing atmospheres, the thermodynamically stable MgF2-phase was formed. In a N2 atmosphere, SO2 and SF6-addns. did not protect the magnesium, indicating that a rapid initial formation of MgO is necessary to obtain protective films.
ST controlled atm film formation **molten magnesium melt** oxidn prevention
IT Casting of metals
Controlled atmospheres
(characterization of the surface films formed on **molten magnesium** in different protective atmospheres)
IT 7439-95-4P, Magnesium, preparation
RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(characterization of the surface films formed on **molten magnesium** in different protective atmospheres)
IT 7446-09-5, Sulfur dioxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(characterization of the surface films formed on **molten magnesium** in different protective atmospheres)
IT 75-28-5, Isobutane 76-19-7 **811-97-2** 454695-19-3, ICEON 49
RL: NUU (Other use, unclassified); USES (Uses)
(gas atmosphere containing; characterization of the surface films formed on **molten magnesium** in different protective atmospheres)
IT 2551-62-4, Sulfur hexafluoride 7783-54-2, Trifluoroamine

RL: NUU (Other use, unclassified); USES (Uses)
(gas atmosphere; characterization of the surface films formed on **molten magnesium** in different protective atmospheres)

IT 1309-48-4, Magnesium oxide (MgO), properties 7783-40-6, Magnesium fluoride (MgF2) 12032-36-9, Magnesium sulfide (MgS)
RL: FMU (Formation, unclassified); PRP (Properties); TEM (Technical or engineered material use); FORM (Formation, nonpreparative); USES (Uses)
(protective phase; characterization of the surface films formed on **molten magnesium** in different protective atmospheres)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

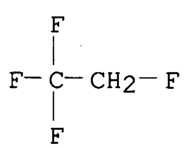
RE

(1) Cashion, S; PhD thesis, Department of Mining, Minerals and Materials Engineering, University of Queensland 1998
(2) Couling, S; Light Metal Age 1977, P12 HCAPLUS
(3) Couling, S; Proc of the 36th Annual World Conference on Magnesium 1979, P54 HCAPLUS
(4) Fruehling, J; PhD thesis, The University of Michigan 1970
(5) Gjestland, H; Proc of the Third Int Magnesium Conference 1996, P33
(6) Hinz, W; The American Mineralogist 1960, V45, P1198 HCAPLUS
(7) JCPDS-International Centre for Diffraction Data; Powder Diffraction File, Sets 1-44
(8) Lindseth, I; Proc 2nd Int Symp on Aluminium Surface Science and Technology (ASST2000) 2000, P553 HCAPLUS
(9) Putz, H; Computational Materials Science 1998, V11, P309 HCAPLUS
(10) Reimers, H; US 1972317 1934 HCAPLUS
(11) Roine, A; HSC Chemical Reaction and Equilibrium Software with extensive Thermochemical Database, version 2.03 1994

IT **811-97-2**
RL: NUU (Other use, unclassified); USES (Uses)
(gas atmosphere containing; characterization of the surface films formed on **molten magnesium** in different protective atmospheres)

RN 811-97-2 HCAPLUS

CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L54 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1

AN 2002:438031 HCAPLUS

DN 137:173739

ED Entered STN: 11 Jun 2002

TI Replacing SF6 with the hydrofluorocarbon gas HFC-134a for **magnesium melt** protection

AU Cashion, Simon P.; Ricketts, Nigel J.

CS Cooperative Research Centre for Cast Metals Manufacturing (CAST) Department of Mining, Minerals and Materials Engineering, The University of Queensland, St. Lucia, 4072, Australia

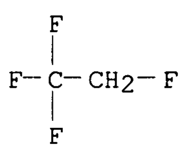
SO Greenhouse Gases in the Metallurgical Industries: Policies, Abatement and Treatment, Proceedings of the International Symposium on Greenhouse Gases in the Metallurgical Industries: Policies, Abatement and Treatment, Toronto, ON, Canada, Aug. 26-29, 2001 (2001), 315-324. Editor(s): Pickles, Chris A. Publisher: Canadian Institute of Mining, Metallurgy and Petroleum, Montreal, Que.

CODEN: 69CROA; ISBN: 1-894475-15-1
DT Conference
LA English
CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 56
AB Sicne the early 1970s, sulfur hexafluoride (SF6) has been used to protect **molten magnesium** from oxidation However the use of SF6 is coming under increased scrutiny. It is now recognized as a very potent greenhouse gas, and has been targeted for phase-out under the Kyoto protocol. In the search for an alternative to SF6, the Cooperative Research Center for Cast Metals Manufacturing (CAST) in Australia is developing a cover gas system based upon the hydrofluorocarbon gas 1,1,1,2-tetrafluoroethane (HFC-134a). This gas has a global warming potential 17 times lower than SF6 and has been shown to be an effective replacement for SF6 in many applications. Recent experience with CAST's new cover gas system in laboratory and plant trials is discussed as well as the global implications of replacing SF6 with HFC-134a.
ST air pollution greenhouse gas sulfur hexafluoride tetrafluoroethane magnesium metallurgy
IT Air pollution
Greenhouse gases
(replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
IT 135860-09-2P, Az91d
RL: IMF (Industrial manufacture); PREP (Preparation)
(AZ91D, protection of molten; replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
IT 7664-39-3P, Hydrogen fluoride, biological studies
RL: ADV (Adverse effect, including toxicity); BYP (Byproduct); BIOL (Biological study); PREP (Preparation)
(decomposition product of HFC-134a; replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
IT **7439-95-4P, Magnesium,** preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(protection of **molten;** replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
IT **811-97-2**, Ethane, 1,1,1,2-tetrafluoro- 2551-62-4, Sulfur fluoride (SF6), (OC-6-11)-
RL: NUU (Other use, unclassified); POL (Pollutant); OCCU (Occurrence); USES (Uses)
(replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Australian Bureau Of Statistics; Motor Vehicle Census 1998, 9309.0, P3
(2) Bartos, S; Magnesium Technology 2000 2000, P83
(3) Cashion, S; Paper presented at the 8th Annual IMA Magnesium in Automotive Seminar 2000
(4) Cashion, S; Ph D Thesis, University of Queensland 1999
(5) Erickson, S; Foundry Management and Technology 1998, V126(6), P38
(6) Fruehling, J; PhD thesis, University of Michigan 1970
(7) Gjestland, H; The 3rd International Magnesium Conference 1996, P33
(8) Granier, C; Scientific Assessment of Ozone Depletion:1998
(9) Mellerud, T; The 56th IMA Annual Meeting 1999
(10) Reimers, H; US 1972317 1934 HCAPLUS
(11) Ricketts, N; WO PCTAU0000393 2000
(12) Ricketts, N; Magnesium Technology 2001 2001, P31 HCAPLUS
(13) Wilkenfeld, G; Analysis of Trends and Greenhouse Indicators 1990 to 1998 2000, P41

IT **7439-95-4P, Magnesium**, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(protection of **molten**; replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
RN 7439-95-4 HCAPLUS
CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

IT **811-97-2**, Ethane, 1,1,1,2-tetrafluoro-
RL: NUU (Other use, unclassified); POL (Pollutant); OCCU (Occurrence); USES (Uses)
(replacing the greenhouse gas SF6 with tetrafluoroethane for **magnesium melt** protection)
RN 811-97-2 HCAPLUS
CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L54 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
AN 2001:272575 HCAPLUS
DN 134:343042
ED Entered STN: 18 Apr 2001
TI Hydrofluorocarbons as a replacement for sulphur hexafluoride in magnesium processing
AU Ricketts, Nigel J.; Cashion, Simon P.
CS Cooperative Research Centre for Cast Metals Manufacturing (CAST), Pullenvale, 4069, Australia
SO Magnesium Technology 2001, Proceedings of the Symposium held during the TMS Annual Meeting, New Orleans, LA, United States, Feb. 11-15, 2001 (2001), 31-36. Editor(s): Hryn, John N. Publisher: Minerals, Metals & Materials Society, Warrendale, Pa.
CODEN: 69BDNU
DT Conference
LA English
CC 56-2 (Nonferrous Metals and Alloys)
AB One of the major issues for users and potential users of **magnesium** is **magnesium melt** protection. This is particularly so with the use of sulfur hexafluoride coming under increased scrutiny, as it is now recognized as a very potent greenhouse gas. It has been demonstrated that sulfur hexafluoride prevents **molten magnesium** from oxidation by adding fluorine into the unprotective magnesium oxide surface film. The hydrofluorocarbon gas 1,1,1,2-tetrafluoroethane (HFC-134a) has been recently developed for **magnesium melt** protection by the Cooperative Research Center for Cast Metals Manufacturing (CAST) in Australia. This gas has a global warming potential 18 times lower than sulfur hexafluoride and has been shown to be an effective replacement for SF6 in many applications. HFC-134a has also been shown to have some unique properties resulting in

more possible applications for **magnesium melt** protection than sulfur hexafluoride. Recent experience with HFC-134a in laboratory and plant trials is discussed as well as the global implications of replacing sulfur hexafluoride with hydrofluorocarbons.

ST **magnesium** alloy **melting** hydrofluorocarbon protection

IT Casting of metals
(hydrofluorocarbons as replacement for sulfur hexafluoride for protection of **molten magnesium** alloys)

IT Cast alloys
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(magnesium alloys; hydrofluorocarbons as replacement for sulfur hexafluoride for protection of **molten magnesium** alloys)

IT 7439-95-4P, Magnesium, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(hydrofluorocarbons as replacement for sulfur hexafluoride for protection of **molten magnesium** alloys)

IT **811-97-2**, 1,1,1,2-Tetrafluoroethane
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(hydrofluorocarbons as replacement for sulfur hexafluoride for protection of **molten magnesium** alloys)

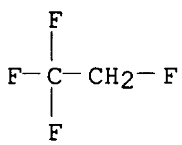
IT 135860-09-2, Az91d
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(hydrofluorocarbons as replacement for sulfur hexafluoride for protection of **molten magnesium** alloys)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Anon; Private communications with Solvay und Fluor GmbH
(2) Bartos, S; Magnesium Technology 2000 2000, P83
(3) Cashion, S; PhD thesis, The University of Queensland 1998
(4) Cashion, S; paper presented at the 8th Annual IMA Magnesium in Automotive Seminar 2000
(5) Couling, S; 36th Annual World Conference on Magnesium 1979
(6) Deinzer, G; Magnesium Alloys and their Applications 1998, P119 HCAPLUS
(7) Erickson, S; Foundry Management & Technology 1998, V126(6), P38
(8) Erickson, S; International Magnesium Association Technical Committee Report
(9) Fruehling, J; PhD thesis, University of Michigan 1970
(10) Gjestland, H; Proceedings of the third International Magnesium Conference 1996, P33
(11) Harvey, R; Estimates of US emissions of high-global warming potential gases and the costs of reductions, Draft Report 2000
(12) Kahn, D; papers presented at Magnesium Alloys and their Applications 1998, P471 HCAPLUS
(13) Li, Y; REWARS'99
(14) Mellerud, T; Presented at 56th IMA Annual Meeting 1999
(15) Peschaux, M; PCT Patent Application, WO 99/43458 1999
(16) Pilling, N; Journal of the Institute of Metals 1923, V29, P529
(17) Reimers, H; US 1972317 1934 HCAPLUS
(18) Revankar, V; 57th Annual World Magnesium Conference 2000, P51
(19) Schwarz, W; Emissions and reduction potentials of hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in Germany 1999
(20) Sturges, W; Science V289, P611 HCAPLUS

IT **811-97-2**, 1,1,1,2-Tetrafluoroethane
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(hydrofluorocarbons as replacement for sulfur hexafluoride for

protection of **molten magnesium** alloys)
RN 811-97-2 HCAPLUS
CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L54 ANSWER 5 OF 9 METADEX COPYRIGHT 2004 CSA on STN
AN 2001(12):51-2066 METADEX
TI **Hydrofluorocarbons** as a replacement for SF6.
AU Ricketts, N.J. (CSIRO); Cashion, S.P. (University of Queensland)
SO Magnesium Industry (Sept. 2001) 2, (5), 26-31, Graphs
ISSN: 1590-959X
DT Journal
CY Italy
LA English
AB One of the major issues for users and potential users of **magnesium** is **magnesium melt** protection. This is particularly so with the use of sulphur hexafluoride coming under increased scrutiny, as it is now recognized as a very potent greenhouse gas. It has been demonstrated that sulphur hexafluoride prevents **molten magnesium** from oxidation by adding fluorine into the unprotective magnesium oxide surface film. The **hydrofluorocarbon** gas 1,1,1,2-**tetrafluoroethane** (HFC-134a) has been recently developed for **magnesium melt** protection by the Cooperative Research Centre for Cast Metals Manufacturing (CAST) in Australia. This gas has a global warming potential 18 times lower than sulphur hexafluoride and has been shown to be an effective replacement for SF6 in many applications. HFC-134a has also been shown to have some unique properties resulting in more possible applications for **magnesium melt** protection than sulphur hexafluoride.
CC 51 Foundry
CT Journal Article; **Magnesium: Melting**; Oxidation resistance: Processing effects; Combustion: Processing effects; Fluorides: Materials selection; Halocarbons; Sulfur compounds: Materials substitution
ET F*S; SF6; S cp; cp; F cp

L54 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:772535 HCAPLUS
DN 133:312399
ED Entered STN: 03 Nov 2000
TI Cover gas mixtures for protection of reactive **Mg** or **Mg** -alloy **melt**

applicants

IN Ricketts, Nigel Jeffrie; Frost, Malcolm Timothy; Cashion, Simon Paul; Korn, Craig John; Baker, Phillip Wilmott
PA Cast Centre Pty Ltd, Australia
SO PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM B22D021-04
ICS B22D021-02; A62D001-02; C22B026-22; C22B004-02; C22C001-02; C22C023-00

CC 56-2 (Nonferrous Metals and Alloys)
Section cross-reference(s): 50
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000064614	A1	20001102	WO 2000-AU393	20000428

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	BR 2000010137	A	20020122	BR 2000-10137	20000428
	TR 200103096	T2	20020422	TR 2001-200103096	20000428
	EP 1204499	A1	20020515	EP 2000-920274	20000428

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2002541999	T2	20021210	JP 2000-613596	20000428
	AU 766844	B2	20031023	AU 2000-40930	20000428
	NZ 515084	A	20031031	NZ 2000-515084	20000428
	TW 500805	B	20020901	TW 2000-89108130	20000504
	NO 2001005264	A	20011221	NO 2001-5264	20011026
	ZA 2001008862	A	20021028	ZA 2001-8862	20011026
	BG 106138	A	20020628	BG 2001-106138	20011123
PRAI	AU 1999-15	A	19990428		
	WO 2000-AU393	W	20000428		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000064614	ICM	B22D021-04
	ICS	B22D021-02; A62D001-02; C22B026-22; C22B004-02; C22C001-02; C22C023-00

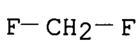
AB The cover-gas blend for protection of the **Mg** or **Mg** -alloy **molten** bath (especially in casting) contains: (a) hydrofluorocarbon type inhibiting gas, typically as difluoromethane or heptafluoropropane at <1% by volume; and (b) suitable carrier gas, especially dry air, CO2, Ar, and/or N2. The component gases are selected to have no O3-depletion potential, as well as a low Global-Warming potential. The cover-gas blends are suitable for preventing oxidation of **Mg** alloy **melt** for ingot casting, as well as for extinguishing of accidental fires on the molten bath. The protective mixture suitable for preventing surface oxidation on the cast ingots of AZ91 Mg-Al alloy contains 0.04% by volume of 1,1,1,2-tetrafluoroethane in dry air, vs. surface dross and discoloration on the ingots solidified under the similar amount of SF6 in dry air.

ST **magnesium** alloy **melt** casting cover gas protection; hydrofluorocarbon cover gas magnesium fire prevention

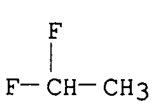
IT Hydrocarbons, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluoro, gas mixts. with; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)

IT Safety
(foundry, for Mg alloy casting; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg**-alloy **melt**)

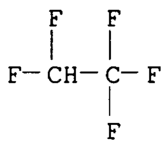
IT Casting of metals
(of Mg alloys; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg**-alloy **melt**)
IT Fire
(prevention, on **Mg**-alloy **melt**; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg**-alloy **melt**)
IT 12634-54-7, AZ91
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(casting of, surface protection in; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
IT 124-38-9, Carbon dioxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(gas mixts. with; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
IT **75-10-5**, Difluoromethane **75-37-6** **354-33-6**, Pentafluoroethane **811-97-2**, 1,1,1,2-Tetrafluoroethane **33660-75-2**, Heptafluoropropane **138495-42-8**, HFC-43-10 **163702-05-4**, HFE-7200 **219484-64-7**, HFE-7100
RL: TEM (Technical or engineered material use); USES (Uses)
(gas mixts. with; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
IT **7439-95-4**, **Magnesium**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**molten**; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Dougherty; US 5115868 A 1992 HCAPLUS
(2) Great Lakes Chemical Corporation; WO 9102564 A 1991
(3) Li; US 5855647 A 1999 HCAPLUS
(4) Minnesota Mining And Manufacturing Company; WO 9622129 A 1996 HCAPLUS
(5) Radzilowski; US 4214899 A 1980 HCAPLUS
(6) Tokai Rika Denki Kk; JP 08143985 1996 HCAPLUS
IT **75-10-5**, Difluoromethane **75-37-6** **354-33-6**, Pentafluoroethane **811-97-2**, 1,1,1,2-Tetrafluoroethane **33660-75-2**, Heptafluoropropane **138495-42-8**, HFC-43-10 **163702-05-4**, HFE-7200 **219484-64-7**, HFE-7100
RL: TEM (Technical or engineered material use); USES (Uses)
(gas mixts. with; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
RN 75-10-5 HCAPLUS
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



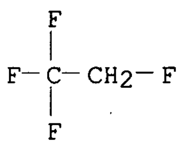
RN 75-37-6 HCAPLUS
CN Ethane, 1,1-difluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 354-33-6 HCAPLUS
CN Ethane, pentafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 811-97-2 HCAPLUS
CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

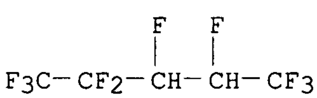


RN 33660-75-2 HCAPLUS
CN Propane, heptafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$H_3C-CH_2-CH_3$

7 (D1—F)

RN 138495-42-8 HCAPLUS
CN Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (9CI) (CA INDEX NAME)



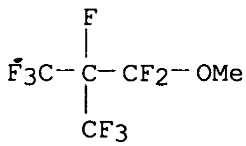
RN 163702-05-4 HCAPLUS
CN Butane, 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro- (9CI) (CA INDEX NAME)

$EtO-(CF_2)_3-CF_3$

RN 219484-64-7 HCAPLUS
CN Butane, 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-, mixt. with 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane (9CI) (CA INDEX NAME)

CM 1

CRN 163702-08-7
CMF C5 H3 F9 O



CM 2

CRN 163702-07-6
CMF C5 H3 F9 O

MeO— $(CF_2)_3$—CF_3

IT **7439-95-4, Magnesium,** uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**molten**; cover gas mixts. with hydrofluorocarbons for protection of reactive **Mg-melt** bath)
RN 7439-95-4 HCAPLUS
CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

L54 ANSWER 7 OF 9 HCAPLUS
AN 1999:811058 HCAPLUS
DN 132:54870
ED Entered STN: 24 Dec 1999
TI Pharmaceutical formulations for aerosols with two or more active substances
IN McNamara, Daniel P.; Destefano, George A.
PA Boehringer Ingelheim Pharmaceuticals, Inc., USA
SO PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM A61K009-12
ICS A61K031-135; A61K031-46
CC 63-6 (Pharmaceuticals)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9965464	A1	19991223	WO 1999-US12785	19990608
	W: AE, AU, BG, BR, BY, CA, CN, CZ, EE, HR, HU, ID, IL, IN, JP, KR, KZ, LT, LV, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, UA, UZ, VN, YU, ZA				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	DE 19827178	A1	20000427	DE 1998-19827178	19980618
	DE 19842963	A1	20000323	DE 1998-19842963	19980919
	CA 2335065	AA	19991223	CA 1999-2335065	19990608
	AU 9945521	A1	20000105	AU 1999-45521	19990608
	AU 759222	B2	20030410		

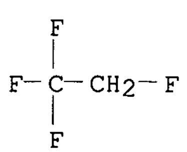
```
     BR 9911351          A     20010313   BR 1999-11351          19990608
     EP 1087750          A1    20010404   EP 1999-928458         19990608
     EP 1087750          B1    20031112
         R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO
     TR 200003721        T2    20010621   TR 2000-200003721      19990608
     ZA 200007581        A     20020402   ZA 2000-7581           19990608
     EE 200000759        A     20020415   EE 2000-759            19990608
     NZ 509418           A     20030630   NZ 1999-509418         19990608
     JP 2003522102       T2    20030722   JP 2000-554344         19990608
     AT 253896           E     20031115   AT 1999-928458         19990608
     RU 2218152          C2    20031210   RU 2001-101898         19990608
     PT 1087750          T     20040227   PT 1999-928458         19990608
     ES 2211108          T3    20040701   ES 1999-928458         19990608
     TW 528606           B     20030421   TW 1999-88110010       19990615
     BG 105033           A     20010928   BG 2000-105033         20001207
     NO 2000006318       A     20010130   NO 2000-6318           20001212
     HR 2000000867       A1    20011031   HR 2000-867            20001215
PRAI DE 1998-19827178    A     19980618
     DE 1998-19842963    A     19980919
     WO 1999-US12785     W     19990608
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------  -----  ----------------------------------------------
 WO 9965464      ICM    A61K009-12
                 ICS    A61K031-135; A61K031-46
```

AB The present invention relates to new pharmaceutical formulations for aerosols with at least two or more active substances for administration by inhalation or by nasal route. Specifically, the invention relates to pharmaceutical prepns. for propellant-driven metered dose aerosols using a fluorohydrocarbon (HFC) as propellant, which contain a combination of active substance of two or more active substances, wherein at least one active substance is present in dissolved form together with at least one other active substance in the form of suspended particles. An aerosol composition contained ipratropium bromide 37 mg, salbutamol sulfate 210.5 **mg**, citric acid 4 **mg**, **liquefied** TG 134a 89.96 g, ethanol 10.03 g, and oleic acid 50 mg.

ST fluorohydrocarbon propellant aerosol ipratropium salbutamol

```
IT   Fatty acids, biological studies
     RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
        (C5-20; aerosols containing two or more active substances and
        fluorohydrocarbon propellant)
IT   Carbohydrates, biological studies
     Glycerides, biological studies
     Lecithins
     RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
        (aerosols containing two or more active substances and fluorohydrocarbon
        propellant)
IT   Drug delivery systems
        (aerosols; aerosols containing two or more active substances and
        fluorohydrocarbon propellant)
IT   Quaternary ammonium compounds, biological studies
     RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
        (alkylbenzyldimethyl, chlorides; aerosols containing two or more active
        substances and fluorohydrocarbon propellant)
IT   Fatty acids, biological studies
     RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
        (esters, C5-20; aerosols containing two or more active substances and
        fluorohydrocarbon propellant)
```

IT Alcohols, biological studies
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(fatty, C5-20; aerosols containing two or more active substances and fluorohydrocarbon propellant)
IT Hydrocarbons, biological studies
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(fluoro; aerosols containing two or more active substances and fluorohydrocarbon propellant)
IT Drug delivery systems
(inhalants; aerosols containing two or more active substances and fluorohydrocarbon propellant)
IT Drug delivery systems
(nasal sprays; aerosols containing two or more active substances and fluorohydrocarbon propellant)
IT 64-17-5, Ethanol, biological studies 112-80-1, Oleic acid, biological studies 431-89-0, TG 227 586-06-1, Orciprenaline **811-97-2**, TG 134a 1338-43-8, Sorbitan monooleate 1944-12-3, Fenoterol hydrobromide 3385-03-3, Flunisolide 4419-39-0, Beclomethasone 12441-09-7D, Sorbitan, esters 13392-18-2, Fenoterol 16110-51-3, Cromoglycic acid 18559-94-9, Salbutamol 22254-24-6, Ipratropium bromide 23031-25-6, Terbutalin 26266-58-0, Sorbitan trioleate 29116-98-1, Sorbitan dioleate 30286-75-0, Oxitropium bromide 51022-70-9, Albuterol sulfate 51333-22-3, Budesonide 54063-54-6, Reproterol 60205-81-4, Ipratropium 69049-73-6, Nedocromil 89365-50-4, Salmeterol 90566-53-3, Fluticasone 148430-28-8
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aerosols containing two or more active substances and fluorohydrocarbon propellant)
IT 50-81-7, Ascorbic acid, biological studies 60-00-4, EDTA, biological studies 77-92-9, Citric acid, biological studies 7647-01-0, Hydrochloric acid, biological studies 7664-38-2, Phosphoric acid, biological studies 7664-93-9, Sulfuric acid, biological studies 7697-37-2, Nitric acid, biological studies
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(as stabilizer; aerosols containing two or more active substances and fluorohydrocarbon propellant)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bell, A; WO 9801147 A 1998 HCAPLUS
(2) Henry, R; US 5589156 A 1996 HCAPLUS
(3) Jager, P; WO 9413262 A 1994 HCAPLUS
(4) McNamara, D; US 5603918 A 1997 HCAPLUS
(5) Riker Laboratories Inc; EP 0499344 A 1992 HCAPLUS
IT **811-97-2**, TG 134a
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aerosols containing two or more active substances and fluorohydrocarbon propellant)
RN 811-97-2 HCAPLUS
CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L54 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:422771 HCAPLUS
DN 122:165333
ED Entered STN: 18 Mar 1995
TI Parting compounds containing fluorocarbons which contain no chlorine and may contain hydrogen
IN Buchwald, Hans; Hellmann, Joachim; Raschkowski, Boleslaus
PA Solvay Fluor und Derivate GmbH, Germany
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C10M111-02
ICS B29C033-60; C03B040-02
ICA C09K015-30; C09K015-22; C09K015-18; C09K003-30; B01F017-00; B22C001-14
ICI C10M111-02, C10M105-52, C10M105-34, C10M105-02, C10M105-76, C10M105-24, C10M105-72, C10M107-04, C10M107-18, C10N040-36
CC 51-11 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 38, 57
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4321288	A1	19950105	DE 1993-4321288	19930626
	US 5476603	A	19951219	US 1994-262930	19940621
	FI 9403069	A	19941227	FI 1994-3069	19940623
	JP 07150188	A2	19950613	JP 1994-141905	19940623
PRAI	DE 1993-4321288	A	19930626		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 4321288	ICM	C10M111-02
	ICS	B29C033-60; C03B040-02
	ICA	C09K015-30; C09K015-22; C09K015-18; C09K003-30; B01F017-00; B22C001-14
	ICI	C10M111-02, C10M105-52, C10M105-34, C10M105-02, C10M105-76, C10M105-24, C10M105-72, C10M107-04, C10M107-18, C10N040-36
US 5476603	ECLA	B29C033/60; B29C033/62; B29C033/64

AB The parting compds. are pressure-liquefied and contain a fluorocarbon chosen from among R134a, R143a, R125, R32, R143, R134, R23, R152a, R14, and R116, a parting agent (e.g., wax, paraffins, silicones, metallic soaps, fats, oils, polymers, or inorg. powders), and optionally solvents (e.g., a gasoline fraction b.p. 100-140°).
ST parting agent fluorocarbon
IT Solvents
(pressure-liquefied fluorocarbon-containing parting compns.)
IT Fats and Glyceridic oils
Gasoline
Oils
Paraffin waxes and Hydrocarbon waxes, uses
Polymers, uses
Siloxanes and Silicones, uses
Soaps
Waxes and Waxy substances
RL: TEM (Technical or engineered material use); USES (Uses)
(pressure-liquefied fluorocarbon-containing parting compns.)
IT Hydrocarbons, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluoro, pressure-liquefied fluorocarbon-containing parting compns.)

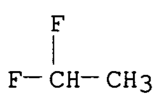
IT **75-10-5**, Difluoromethane **75-37-6**, R152a 75-46-7, R23
75-73-0, R14 76-16-4, R116 **354-33-6**, R125 359-35-3, R134
420-46-2, R143a 430-66-0, R143 557-04-0, **Magnesium** stearate
811-97-2, R134a 7429-90-5D, Aluminum, soaps 7439-92-1D, Lead,
soaps **7439-95-4D**, **Magnesium**, soaps 7440-66-6D, Zinc,
soaps 7440-70-2D, Calcium, soaps
RL: TEM (Technical or engineered material use); USES (Uses)
(pressure-**liquefied** fluorocarbon-containing parting compns.)

IT **75-10-5**, Difluoromethane **75-37-6**, R152a **354-33-6**
, R125 **811-97-2**, R134a **7439-95-4D**, **Magnesium**
, soaps
RL: TEM (Technical or engineered material use); USES (Uses)
(pressure-**liquefied** fluorocarbon-containing parting compns.)

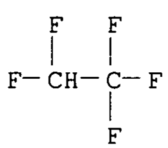
RN 75-10-5 HCAPLUS
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F— CH_2 — F

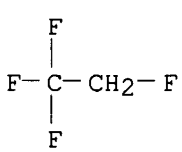
RN 75-37-6 HCAPLUS
CN Ethane, 1,1-difluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 354-33-6 HCAPLUS
CN Ethane, pentafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 811-97-2 HCAPLUS
CN Ethane, 1,1,1,2-tetrafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-95-4 HCAPLUS
CN Magnesium (8CI, 9CI) (CA INDEX NAME)

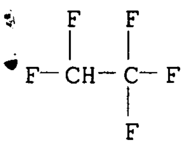
Mg

L54 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1954:64093 HCAPLUS
DN 48:64093
OREF 48:11316h-i,11317a-g
ED Entered STN: 22 Apr 2001
TI Pyrolyses of the salts of the perfluoro carboxylic acids
AU La Zerte, J. D.; Hals, L. J.; Reid, T. S.; Smith, G. H.
CS Minnesota Mining & Manufg. Co., St. Paul
SO Journal of the American Chemical Society (1953), 75, 4525-8
CODEN: JACSAT; ISSN: 0002-7863
DT Journal
LA Unavailable
CC 10 (Organic Chemistry)

AB The thermal decomposition of a number of salts of the straight-chain perfluoro acids has been investigated. From the Na salts, terminally unsatd. perfluoroolefins were prepared in yields ranging from 65 to 100%. The reaction is represented by the equation CnF2n+1CF2CF2CO2Na → CnF2n+1CF:CF2 + CO2 + NaF. Salts of other metals of the groups I, II, and III of the periodic table gave varying yields of olefins. C3F7CO2Ag (I) and C7F15CO2Ag (II) decomposed to give C6F14 and C14F30, resp. C2F4 was formed when a mixture of CF3CO2Na and NaOH was heated. A series of fluorocarbon hydrides, CnF2n+1H, was prepared by heating the salts of perfluoro acids in (CH2OH)2. The NH4, Li, Na, K, Ca, Sr, and Ba salts of the perfluoro acids were all prepared by neutralizing an aqueous solution of the
acid with a solution of the hydroxide. (C3F7CO2)2Mg and (C3F7CO2)2Pb were obtained from aqueous C3F7CO2H (III) and the metal oxides at slightly above 25°; both salts were hygroscopic; the vacuum-dried Pb salt was further dried by azeotropic distillation with CCl4. I and II were prepared by treating freshly prepared Ag2O with the dilute aqueous acids. (C3F7CO2)2Cu was obtained by passing dry air into a mixture of finely divided Cu powder and excess III at 120°. (C3F7CO2)3Al was prepared by the method of Hood and Ihde (C.A. 44, 7228i) from AlCl3 and excess III in the presence of (C3F7CO2)2O (IV) at 100°. The purity of the salts had a great influence on the decomposition reaction. In the presence of an inorg. base, the pyrolysis of the salts gave products contaminated with fluorocarbon monohydrides; to avoid this, the pH of the salt solns. was adjusted to pH 5-7. H2O vapors in the pyrolysis zone also led to the formation of H-containing compds. The pyrolyses were carried out, in general, in Pyrex flasks; the rate of the decomposition was controlled by varying the temperature; the
resulting volatile products were passed through 2 scrubbers containing 15% KOH, dried over P2O5, and condensed in a cold trap. The thermal stabilities of some salts of III were determined by heating small weighed samples 0.5 hr. at 20-5° intervals until almost complete decomposition was obtained; the temperature at which 20% decomposition was obtained (given) was for
the following salts: NH4 185° K 200°, Na 235°, Ba 275°, Sr 275°, Ag 295°; and for (CF3)2CFCO2Na 185°. The Na salts of higher straight-chain perfluoro acids underwent 20% decomposition at 240-50°, and C4F9CO2K at 175-80°. The Na and Ba salts of CF3CO2H gave CF3COF and (CF3CO)2O; the same products were obtained from the Li and Ca salts. The pyrolysis of CF3CO2Na in the presence of solid NaOH proceeded at about 270° exothermically to give C2F4, along with some CF3COF and CHF3; the min. yield of C2F4 was 32% in better than 98% purity; 1% by weight of Pr3N was always added to the C2F4 to prevent the explosive polymerization of the monomer. The following salts of III were pyrolyzed and the pyrolysis products determined (the decomposition temperature, % yield CF3CF:CF2, and the other

fluorinated products formed given): Li, 240-50°, 20, C3F7COF (V), IV, III; K, 215-35°, 98, -; **Mg**, 275-300°, <5,high-boiling **liquid**; Ca, 275-300°, <10, V, IV, III; Sr, 275-85°, 25, V, III; Ba, 265-75°, 78, -; Pb, 300-5°, <10, V, IV, some III; Cu, trace, V, unidentified product; Al, 250°, <5, V, III, C2F6; NH4, 180-200°, 0, CF3CF2CF2H; Ag, 300-20°, 45, C6F14. C4F9CO2K (1681 g.) and 907 g. (CH2OH)2 heated 5 hrs. at 170-90° gave 1169 g. cold-trap condensate which on fractionation yielded 1017 g. (84%) CF3(CF2)3H, b740 14°, λmaximum 3015 cm.-1 (C-H). Similarly were prepared from the Na salts of the appropriate perfluoro acids the following hydrides CF3(CF2)nH (VI) (n, % yield, b.p./740 mm. given): 1, 98, -50°; 2, 97, -16°; 4, 80, 46°; 6, 60, 94°, n25D 1.2690. C5F11CO2Na (210 g.), prepared in 93% yield by neutralizing C5F11CO2H with aqueous NaOH, pyrolyzed at about 250° yielded 141 g. (90%) C3F7CF:CF2, b. 28-9.0°, n25D 1.2571, λmaximum 1795 cm.-1 Similarly were prepared the following olefins from the appropriate Na salts (compound, % yield, b.p., and n15D given): C2F4, 90, -74°, -; CF3CF:CF2, 97, -29°, -; C2F5CF:CF2, 91, 1°, -; C5F11CF:CF2, 86, 81, 1.2782; C7F15CF:CF2, 65, 123°, 1.2868. The infrared absorption spectra of VI with n = 2, 3, 4, and 6 all showed C-H absorption in the range 2940-2990 cm.-1.

IT Spectra
(of hydrocarbons (fluorinated))
IT Pyrolysis
(of perfluoro carboxylic acid salts)
IT Salts
(of perfluoro carboxylic acids, pyrolysis of)
IT Octanoic acid, pentadecafluoro-, silver salt
Propionic acid, 2,3,3,3-tetrafluoro-2-(trifluoromethyl)-, sodium salt
(pyrolysis of)
IT 76-05-1, Acetic acid, trifluoro-
(and derivs.)
IT 375-22-4, Butyric acid, heptafluoro-
(and derivs., pyrolysis of)
IT 116-14-3, Ethylene, tetrafluoro-
(formation of, from CF3Co2Na and NaOH)
IT 75-46-7, Fluoroform
(formation of, from Na trifluoroacetate)
IT 76-16-4, Ethane, hexafluoro-
(formation of, in (C3F7CO2)3Al pyrolysis)
IT 116-15-4, Propene, hexafluoro-
(formation of, in pyrolysis of heptafluorobutyric acid salts)
IT 307-62-0, Tetradecane, triacontafluoro- **354-33-6**, Ethane, pentafluoro- 354-34-7, Acetyl fluoride, trifluoro- 355-42-0, Hexane, tetradecafluoro- 355-63-5, 1-Heptene, tetradecafluoro- 357-26-6, 1-Butene, octafluoro- 375-17-7, Butane, 1,1,1,2,2,3,3,4,4-nonafluoro- 375-61-1, Pentane, 1,1,1,2,2,3,3,4,4,5,5-undecafluoro- 375-83-7, Heptane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7-pentadecafluoro- 376-22-7, 1-Nonene, octadecafluoro- 376-87-4, 1-Pentene, decafluoro- 2252-84-8, Propane, 1,1,1,2,2,3,3-heptafluoro-
(preparation of)
IT 336-23-2, Valeric acid, nonafluoro-, potassium salt 2923-26-4, Hexanoic acid, undecafluoro-, sodium salt
(pyrolysis of)
IT **354-33-6**, Ethane, pentafluoro-
(preparation of)
RN 354-33-6 HCAPLUS
CN Ethane, pentafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



=>